Message

From: Hackler, Pam [pam.hackler@dnr.mo.gov]
Sent: 7/15/2020 4:14:45 PM
To: Dunn, John [Dunn.John@epa.gov]
Subject: Labadie proposed table

Draft of the table for Labadie outfall #001.

OUTFALL #001
single pass cooling

TABLE A-1
FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

The permittee is authorized to discharge from outfall(s) as specified. The final effluent limitations shall become effective on **Effective Date** and remain in effect until expiration of the permit. Such discharges shall be controlled, limited, and monitored by the permittee as specified below:

EFFLUENT PARAMETERS	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS			
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY		SAMPLE TYPE	
LIMIT SET: T ▲								
PHYSICAL								
Flow, Effluent (Qe)	MGD	*		*	continuous		24 hr. total	
Flow, Effluent (Qe)	cfs	*		*	continuous		instantaneous	
Flow, Stream Net (Qs-Qi)	cfs	*		*	continuous		calculation	
Temperature, Effluent (Te)	°F	*		*	continuous		measured	
Thermal Discharge Parameter (TDP)	value	0.95		*	continuous		calculation	
MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE MONTH 28, 20XX.								
LIMIT SET: TV (THERMAL VARIANCE) ♠								
TDP	value	*		*	continuous		calculation	
Mixing Zone	%	40		*	continuous		calculation	
Time Variance Used	hours	* total ♠		528 ♠	continuous		calculation	
MONITORING REPORTS SHALL BE SUBMITTED WHEN THE THERMAL VARIANCE IS USED. A REPORT IS NOT DUE IF THE VARIANCE IS NOT BEING USED. IF THE VARIANCE IS USED, THE REPORT IS DUE ON THE 28TH DAY OF THE MONTH FOLLOWING THE VARIANCE USE.								
LIMIT SET: U (UNSCHEDULED)								
Whole Effluent Toxicity, Acute	TU_a	3.3			once/discharge		grab	
MONITORING REPORTS SHALL BE SUBMITTED BY THE 28TH DAY OF THE MONTH FOLLOWING THE COLLECTION OF THE TEST. SEE SPECIAL CONDITIONS								

▲ Limit Set T Requirements

Qe = maximum daily effluent flow volume from outfall #001 in MGD and cfs
Qs = maximum daily stream flow minus maximum daily intake flow in cfs
Te = maximum daily effluent temperature from outfall #001 in °F
Ts = maximum daily stream temperature in °F

Equation #1

M1 is the ratio of the volume of the discharge to the volume of the river. M1 is expressed as a decimal in the equations below. To determine the percentage, multiply by 100. The percentage of mixing used by the facility cannot be greater than 25% on normal days and cannot be greater than 40% on days where the variance is being used. M1 = (Qe / Qs)

For equations #2 through #4

Td is the difference between the temperature of the effluent, and the temperature of the stream. Td = Te – Ts
If Td is equal to 20 or between 20 and 50, use the actual Td value.
If Td is less than 20, use 20
If Td is greater than 50, use 50; a value greater than 50 shall not be used for any equation.

Equation #2

When Ts < 80.0 °F:
$M2 = 0.00006024 (Td)^2 - 0.00604124 (Td) + 0.2470357$

Equation #3

When 80.0 °F ≤ Ts ≤ 85.0 °F:
$M2 = 0.00006024 (Td)^2 - 0.00604124 (Td) + (-0.000200 Ts + 0.2207404)$

Equation #4

When 85.1 °F < Ts ≤ 90.0 °F and Td is between 10 and 50:
$M2 = (-0.362 * Ts + 32.578) * Td^{-0.925}$
If M2 is >0.108 set M2 to 0.108
If Td is less than 10, set Td to 10.

When Ts > 90.0, the variance time must be used to operate.

Equation #5

TDP = M1 / M2

Stream flow is measured in cubic feet per second (cfs) and stream temperature is measured in degrees Fahrenheit (°F). Data to fulfil this reporting requirement shall be gathered from USGS Gage Station 06935550 near Labadie, MO. If gaging station data is not available for temperature, the facility may manually attain temperature at the intake or other representative location. If flow data is unavailable, the flow data shall be averaged from the preceding three days and three days after the flow gage is fixed. The facility may contact the Department for other alternatives if necessary.

♠ Limit Set TV Requirements:

The facility only needs to use this limit set when using variance conditions outlined here. When the variance is being used, the facility will not report a TDP value in the Limit Set: T group.

The facility will report the monthly total for the daily column, and the cumulative annual total for the calendar year in the monthly column.

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